LeiLOX **CBLO**

Combines the advantages of TPLO and TTA

CBLO (CORA based leveling osteotomy) is a modern osteotomy technique to level the tibia plateau, similar to TPLO. However, CBLO addresses further challenges such as secondary (late) meniscal damage, overload of the caudal cruciate ligament, reduction of proximal anatomic axis shift and the secondary translation as well as misalignment of the joint.

Multiaxial Locking & Titanium

The screws can be locked in 90° angle with a 12° deviation in any direction. This allows you to angle the screws away from vital structures. The robust LeiStar screw head can be locked firmly into the plate.
All LeiLOX CBLO Implants are made of Titanium by RITA LEIBINGER for the best biocompatibility.

Anatomically Shaped Limited Contact Dynamic Compression Plates

The LeiLOX CBLO plates are contoured to match the anatomic shape of the bone. This makes it easier to place the plate in an optimal position.
The plate features limited contact dynamic compression to minimize vascular damage to the plated bone segment.

Double Compression

Two precisely designed compression holes enable a very tight compression of the osteotomy. This allows you to use a standard cortical screw as the cranio-caudal holding screw (instead of a headless compression screw).

Interchangeable 2.0/2.4 & 2.7/3.5mm Screws

Because the screwheads are identical, all Titanium 2.7/3.5 LeiLOX plates (TPLO Swing, CBLO, and CCWO systems) work with 2.7mm as well as 3.5mm screws in all of the plate sizes. Same applies for the 2.0/2.4 systems. This offers flexibility and ideal implant selection for each patient. Moreover, this saves on inventory cost.

High Performance Sawblades are available. The Titanium Nitrate coating allows them to last significantly longer than standard blades.

LeiLOX

CBLO Locking System

Special Thanks to
Dr. Hugo Schmökel

LeiLOX **CBLO**

RITA LEIBINGER MEDICAL

LEILOX CBLO TECHNIQUE

Pre-Operative Planning

Positioning the Patient for Radiographs

Proper positioning is essential for accurate planning. Orthogonal radiographs are taken with the stifle positioned at 90 degrees and the tarsus at 90 degrees for the lateral projection. The AP projection must have the stifle and tarsus included for the attending surgeon to assess limb alignment. The patient is best sedated for radiographs to assure optimal positioning.

Determining the CORA

The distal mid-diaphyseal line (**FA**) as well as the Tibia Plateau (**TP**) are determined.

The proximal axis (PA) is determined from the intersection point on the tibia plateau with the angle α [normally 80° = 90° - 10° *(post-operative required TP angle)*].

The intersection point of FA and PA is the **CORA**.

The angle **β** is then the correction.

The required saw blade is determined by a circle CORA as the centre point. Draw and measure a line (**D1**) from the insertion of the patella tendon to the point at which the saw blade crosses the cranial cortex. Draw and measure a second line (**D2**) from the joint line at a point where the MCL crosses the joint to the location where the saw blade crosses the caudal cortex. With these D1 and D2 measurements, the osteotomies can be positioned correctly during the surgery.

Determining the Correction

Based on the measured correction angle and the selected saw blade select the appropriate correction in the Leibinger LeiLOX CBLO Rotation Chart in the field "Rotation".

View or Download the rotation chart here →

LeiLOX CBLO Rotation Chart

Correction Angle			5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°	21°	22°	23°	24°	25°	26°	27°	28°	29°	30°	31°	32°	33°	34°
Radians			0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.17	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24	0.24	0.25	0.26	0.27	0.28	0.29	0.30
Saw blade	9mm	Rotation	0.8	0.9	1.1	1.3	1.5	1.6	1.7	1.9	2.1	2.2	2.4	2.5	2.7	2.8	3.0	3.2	3.3	3.5	3.6	3.8	3.9	4.1	4.2	4.4	4.5	4.7	4.8	5.0	5.1	5.3
	12mm		1.0	1.3	1.5	1.7	1.9	2.1	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.8	4.0	4.2	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8	6.0	6.2	6.4	6.6	6.8	7.0
	15mm		1.3	1.6	1.8	2.1	2.4	2.6	2.9	3.1	3.4	3.7	3.9	4.2	4.4	4.7	5.0	5.2	5.5	5.7	6.0	6.2	6.5	6.7	7.0	7.3	7.5	7.8	8.0	8.3	8.5	8.8
	18mm		1.6	1.9	2.2	2.5	2.8	3.1	3.5	3.8	4.1	4.4	4.7	5.0	5.3	5.6	5.9	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5
	21mm		1.8	2.2	2.6	2.9	3.3	3.7	4.0	4.4	4.8	5.1	5.5	5.8	6.2	6.6	6.9	7.3	7.7	8.0	8.4	8.7	9.1	9.4	9.8	10.2	10.5	10.9	11.2	11.6	11.9	12.3
	24mm		2.1	2.5	2.9	3.3	3.8	4.2	4.6	5.0	5.4	5.8	6.3	6.7	7.1	7.5	7.9	8.3	8.7	9.2	9.6	10.0	10.4	10.8	11.2	11.6	12.0	12.4	12.8	13.2	13.6	14.0
	27mm		2.4	2.8	3.3	3.8	4.2	4.7	5.2	5.6	6.1	6.6	7.0	7.5	8.0	8.4	8.9	9.4	9.8	10.3	10.8	11.2	11.7	12.1	12.6	13.1	13.5	14.0	14.4	14.9	15.3	15.8
	30mm		2.6	3.1	3.7	4.2	4.7	5.2	5.8	6.3	6.8	7.3	7.8	8.4	8.9	9.4	9.9	10.4	10.9	11.4	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0	16.5	17.0	17.5
	33mm		2.9	3.5	4.0	4.6	5.2	5.8	6.3	6.9	7.5	8.0	8.6	9.2	9.8	10.3	10.9	11.5	12.0	12.6	13.2	13.7	14.3	14.8	15.4	16.0	16.5	17.1	17.6	18.2	18.7	19.3

Surgery Protocol

Positioning of the Patient

The dog is placed in a dorsal recumbency with the affected limb suspended from a stand. Make sure that the dog's paws are not fixed too tightly, since the affected limb will be put against the table later in the surgery. CBLO is performed through a medial skin incision. The internal structures of the joint should be examined, this is accomplished arthroscopically or with a medial open mini arthrotomy.

Most importantly, the caudal horn of the medial meniscus must be examined closely and torn meniscus parts excised if present. Next, the insertion of the sartorius muscle is reflected from the medial tibia to expose the MCL. Limited reflection of the popliteal muscle and protection of the popliteal artery with gauze packing or Hohmann retractor is optional. D1 and D2 measurements are marked distal to the insertion of the patella tendon (D1) and distal to the joint line at the MCL (D2).

Use of a Jig

The use of a jig is advised when performing a leveling osteotomy.

Placement of the Jig

The proximal pin of the jig is inserted about 3-4mm below the joint surface caudal to the MCL. The pin must be absolutely parallel to the joint surface.

The Jig is slid over the proximal pin. The Jig can be used as a guide for placing the distal pin. Both pins must be parallel to each other. The Jig must be in a right angle to the pins. After the positions are correct, the screws as well as the grub screws can be tightened.

Making the Osteotomy

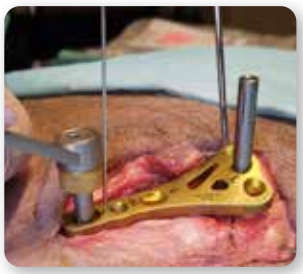
1. The appropriate saw blade determined in the pre-operative planning is positioned at D1/D2 and a circular osteotomy begins. The osteotomy is stopped when 1/3 to 1/2 complete. Move the saw circularly so that it won't stick. The pre-operatively determined correction measurements (in mm) should be marked for example by a small chisel and mallet.

2. At the insertion point of the patella a 2.0mm pin can be preplaced without crossing the osteotomy.

3. Complete the cut and rotate the bone fragment. The rotation is made with the pin so that the marks are aligned. The osteotomy is then stabilized with the pin. Carefully avoid a rotation or valgus mistake. The preplaced pin is directed across the osteotomy under the medial cortex to exit the caudal cortex of the tibia distal to the osteotomy.

Stabilization of the Osteotomy with Plate Compression

The CBLO procedure not only levels the tibial plateau, but also involves cranially advancing the tibial crest. This advancement enhances the structural moment arm of the tibia, consequently increasing quadriceps force on the osteotomy site. To increase stability and promote faster healing, compression of the osteotomy is essential.



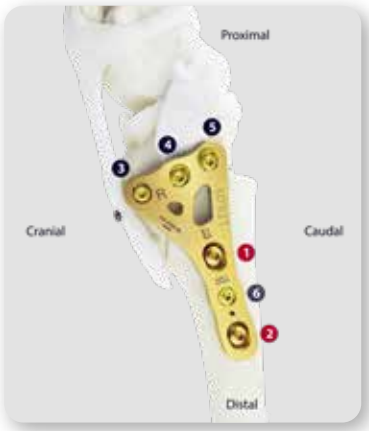
The LeiLOX CBLO plate facilitates this compression, particularly when the distal portion of the plate sits flush on the tibial surface without exerting lateral pressure on the proximal tibia. By positioning the LeiLOX CBLO Plate at the desired location and pre-fixing it with a 1mm positioning pin in the plate shaft, precise compression and stabilization of the osteotomy can be achieved.

Original Author (English version):
Dr. Hugo Schmökel, Dr.med.vet. PhD, Dipl. ECVS

cblo.leibinger.vet

Sequence of Screw Insertion

The screws are inserted in the following (recommended) sequence:



1 2

The first screws to be placed are the ***2 cortical screws*** in the 2 compression holes in the plate. Drill the holes with the matching compression drill guide facing distal. Place the screw but do not tighten yet.

3 4 5

Place the proximal ***locking screws*** in the plate head. Drill the hole with the matching locking drill guide and insert the screw one by one. Fully tighten the screws.

NOTE: The locking mechanism of the LeiLOX CBLO plate is designed multi-axial, offering versatility and adaptability during surgical procedures. If there is concern about screws entering the joint when drilling at a 90° angle, simply adjust the angle of the drill guide to face distally. This adjustment allows for precise screw placement while minimizing the risk of intra-articular penetration.

Remove the stabilizing pin and the positioning pin.

1 2

Tighten the compression screws 1 and 2.

6

Insert ***locking screw*** 6 and tighten.

Screws

To counteract the pull of the quadriceps muscle, a screw should be placed in the same location as the pin through the crest in a caudo-distal direction.

In large dogs it is advised to place 2 cranial screws to counteract the quadriceps force. In giant breed dogs the placement of a second plate should be considered.

Image: Big dogs, stabilized with a 3.5mm broad plate and two cranial screw

Check the tightness of all screws.

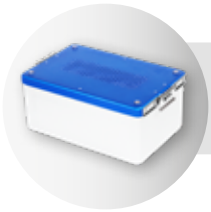
Close the wound using standard techniques. It is crucial to properly close the periosteum and soft tissue layers to safeguard the plate site. Ensure not to overlook the closure of incision made for the distal jig pin.

2.0 / 2.4 LeiLOX CBLO Set

Contents:
1 CBLO Implants and
Instruments Tray with Lid
2 of each CBLO Plate
3 of each Cortical Screw
(8-18mm // 8-22mm, 42 total)
5 of each Locking Screw
(6-24mm // 6-30mm, 115 total)
2 Drills (1.5 & 1.8mm)
5 K-Wires
2x2 Locking Drill Guides
2 Compression Drill Guides
1 TPLO Jig
1 Screwdriver Handle
1 Screwdriver Shaft T8
1 Depth Gauge

142-4200-00

Tray without contents
142-4200-10



Sterilization Container
See Sterilization Containers for Implants and Instruments Trays on **Page 204.**

2.0 / 2.4 LeiLOX CBLO Locking Plates

LeiLOX CBLO Locking Plate, 2.0 mm, left, 35 mm, titanium

142-2320-10

LeiLOX CBLO Locking Plate, 2.0 mm, right, 35 mm, titanium

142-2320-00

LeiLOX CBLO Locking Platte, 2.4 mm, left, 40 mm, titanium

142-2324-10

LeiLOX CBLO Locking Plate, 2.4 mm, right, 40 mm, titanium

142-2324-00

CBLO Screws Locking & Non-Locking 2.0/2.4 Titanium

2.0 / 2.4 LeiLOX Locking Screw Titanium

For LeiLOX Locking Systems, LeiStar T8
self-holding (T8 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge

STAR Screw-Head

	2.0 mm	2.4 mm
Length (mm)	Product Code	Product Code
06	242-220-06	242-224-06
08	242-220-08	242-224-08
10	242-220-10	242-224-10
12	242-220-12	242-224-12
14	242-220-14	242-224-14
16	242-220-16	242-224-16
18	242-220-18	242-224-18
20	242-220-20	242-224-20
22	242-220-22	242-224-22
24	242-220-24	242-224-24
26	242-220-26	242-224-26
28	242-220-28	242-224-28
30	242-220-30	242-224-30
32		242-224-32
34		242-224-34
36		242-224-36
38		242-224-38
40		242-224-40

See more screw lengths on **Page 126.**

Screw Racks on **Page 198.**

2.0 / 2.4 Cortical Screw (Non-Locking) Titanium

LeiStar T8, Non-Locking
self-holding (T8 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge

STAR Screw-Head

	2.0 mm	2.4 mm
Length (mm)	Product Code	Product Code
08	245-520-08	245-524-08
10	245-520-10	245-524-10
12	245-520-12	245-524-12
14	245-520-14	245-524-14
16	245-520-16	245-524-16
18	245-520-18	245-524-18
20		245-524-20
22		245-524-22

2.7 / 3.5 LeiLOX CBLO Set

Contains:
1 CBLO Implants and Instruments Tray with Lid
1 Screwrack CBLO 2.7
1 Screwrack CBLO 3.5
2 of each CBLO Plate
3 of each 2.7mm Cortical Screw (16-34mm)
3 of each 3.5mm Cortical Screw (16-34mm)
5 of each 2.7mm Locking Screw (16-46mm)
5 of each 3.5mm Locking Screw (16-60mm)

142-4000-10

Tray without contents
142-4000-01

2.7 / 3.5 LeiLOX CBLO Locking Plates

LeiLOX CBLO Plate, 2.7 mm, left, 55 mm, titanium

142-2327-10

LeiLOX CBLO Plate, 2.7 mm, right, 55 mm, titanium

142-2327-00

LeiLOX CBLO Plate, 3.5 mm, left, 70 mm, titanium

142-2335-10

LeiLOX CBLO Plate, 3.5 mm, right, 70 mm, titanium

142-2335-00

LeiLOX CBLO Plate, broad, 3.5 mm, left, 78 mm, titanium

142-2335-60

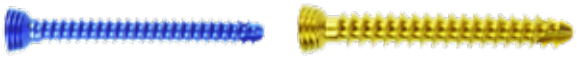
LeiLOX CBLO Plate, broad, 3.5 mm, right, 78 mm, titanium

142-2335-50

2.7 / 3.5 LeiLOX Locking Screw Titanium

For LeiLOX Locking Systems, LeiStar T10
self-holding (T10 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge

STAR Screw-Head



	2.7 mm	3.5 mm
Length (mm)	Product Code	Product Code
10	242-227-10	242-235-10
12	242-227-12	242-235-12
14	242-227-14	242-235-14
16	242-227-16	242-235-16
18	242-227-18	242-235-18
20	242-227-20	242-235-20
22	242-227-22	242-235-22
24	242-227-24	242-235-24
26	242-227-26	242-235-26
28	242-227-28	242-235-28
30	242-227-30	242-235-30
32	242-227-32	242-235-32
34	242-227-34	242-235-34
36	242-227-36	242-235-36
38	242-227-38	242-235-38
40	242-227-40	242-235-40
42	242-227-42	242-235-42
44	242-227-44	242-235-44
46	242-227-46	242-235-46
48	242-227-48	242-235-48
50	242-227-50	242-235-50
52		242-235-52
54		242-235-54
56		242-235-56
58		242-235-58
60		242-235-60

See more screw lengths on **Page 126.**

2.7 / 3.5 Cortical Screw Titanium

LeiStar T10, Non-Locking
self-holding (T10 Shaft from Rita Leibinger recommended)
self-tapping with three flute cutting edge

STAR Screw-Head

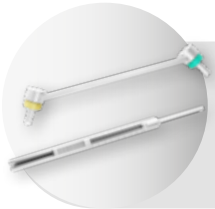
	2.7 mm	3.5 mm
Length (mm)	Product Code	Product Code
16	245-527-16	245-535-16
18	245-527-18	245-535-18
20	245-527-20	245-535-20
22	245-527-22	245-535-22
24	245-527-24	245-535-24
26	245-527-26	245-535-26
28	245-527-28	245-535-28
30	245-527-30	245-535-30
32	245-527-32	245-535-32
34	245-527-34	245-535-34

TPLO Saw Blades

See radial saw blades for TPLO and CBLO in various radii on **Page 191.**

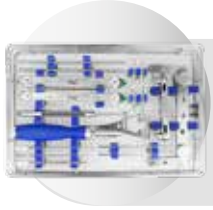
Screw Racks

See screw racks for 1.5mm up to 3.5mm screws on **Page 198.**



CBLO Instruments

See essential instruments for a CBLO Surgery on **Page 78.**



Instrument Set

See Instrument Set for TPLO / CBLO / CCWO on **Page 78.**